

Practise

For help with #4 to #7, refer to Example 1 on page 140.

4. State whether you would multiply or divide to determine the missing value.

a) $\frac{1}{3} = \frac{\blacksquare}{144}$

b) $\frac{1}{\blacksquare} = \frac{5.2}{117}$

5. Determine the missing value in each proportion.

a) $\frac{1}{9} = \frac{\blacksquare}{117}$

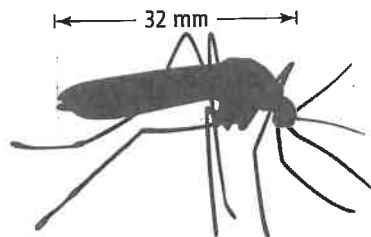
b) $\frac{1}{12} = \frac{10.5}{\blacksquare}$

6. Calculate the actual length of each object.

- a) The scale for the image of the school bus is 1:302.5.

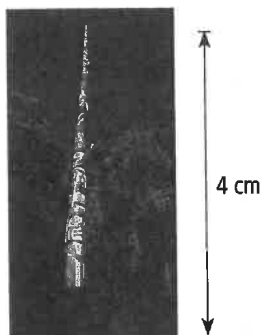


- b) The scale for the enlarged image of a mosquito is 1:0.5.



7. Determine the actual length of each object.

- a) The scale for the image of Victoria's tallest totem pole is 1:972.5.



- b) The scale for the model of the humpback whale is 1:280.



For help with #8 to #12, refer to Example 2 on page 141.

8. What is the scale factor?

a) $\blacksquare = \frac{30}{200}$

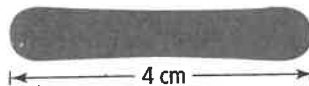
b) $\blacksquare = \frac{21}{12.5}$

9. Determine the scale factor.

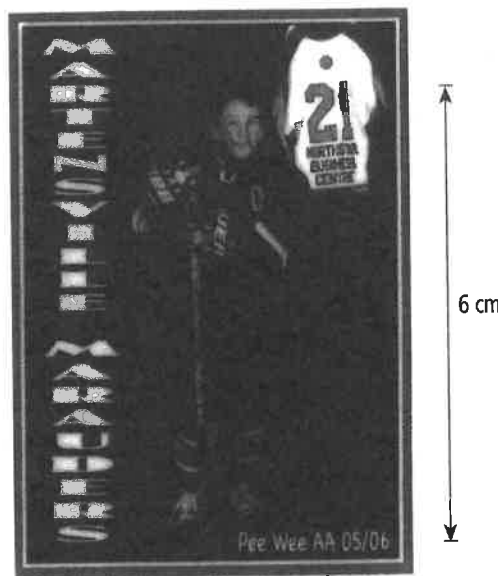
a) $\blacksquare = \frac{0.5}{25}$

b) $\blacksquare = \frac{1.6}{3.2}$

10. What scale factor was used to create the image of the snowboard if its actual length is 166 cm? Express your answer to the nearest hundredth.



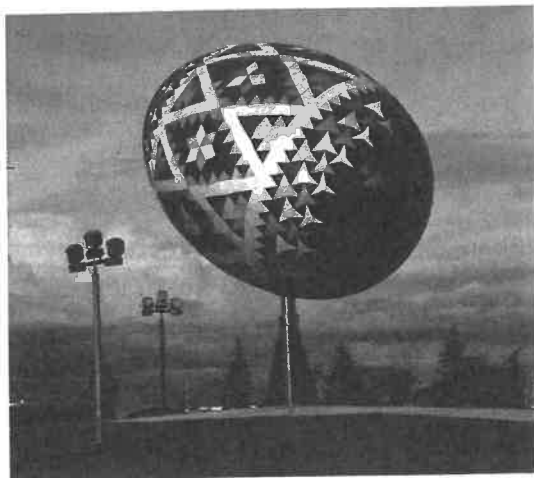
11. At the time his photo was taken for the hockey card, Ken was 152.4 cm tall. Calculate the scale factor used to create Ken's image on the hockey card. Express the answer to the nearest hundredth.



12. A flying distance is 800 km. If this distance on a map is 5 cm, what is the scale factor?
Hint: 1 km = 100 000 cm.

Apply

13. A Ukrainian decorated egg is called a pysanka. A giant version of a pysanka is located in Vegreville, Alberta. The length of the egg is 9.4 m.



- On a scale diagram of the pysanka, what would the length be, if you used a scale of 1:150?
- Could your result represent the length of an actual egg? Explain.

14. The footprint of an adult male polar bear measures 30 cm across.

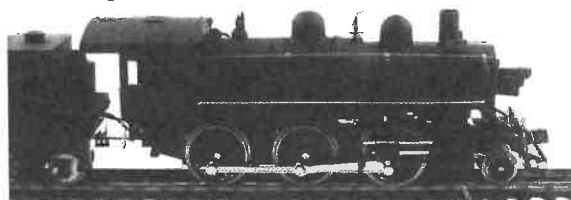
- What is the scale factor of this drawing?
- What is the actual length of the polar bear's footprint? Show how you know.
- Measure your hand span by spreading your hand on a piece of paper. Write the ratio of your hand span to the span of the polar bear's footprint. What conclusion can you make?



15. Viruses are much smaller than bacteria. Some viruses measure 0.0001 mm in diameter. An artist's diagram of a virus shows the diameter as 5 mm. Determine the scale factor used.

16. For the science fair, Leanne plans to build a scale model of a communications tower that is actually 250 m in height. The model has to fit in the foyer of the school, which has a floor-to-ceiling height of 3 m. If Leanne uses a scale of 1:100 to build the model, will it fit into the foyer? Show your work.

17. A model train is a scale model created from actual measurements. The scale factor for HO or Half Zero model trains is 1:87. A typical engine, such as the one shown, is 50 mm in height and 200 mm in length. Determine the actual dimensions of the train engine.



18. Determine the scale factor for each enlargement or reduction.

- from A to B
- from A to C
- from B to C
- from C to A
- from C to B

